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Emerging Markets Queries in Finance and Business

Price convergence in Romania - Statistical evaluation

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Abstract

The creation of both the Economic and Monetary Union and of the single common market have meant two very important steps in getting a more and more compact Union. The first step regarding EMU lead to the adoption of a single currency and to the elimination of the exchange rates fluctuations, while the second one lead to the elimination of physical, administrative and technical barriers in order to achieve a sustainable economic growth and a stimulation of competition.

These two aims are frequently monitored, among the indicators measuring their fulfilment being those concerning prices: The harmonised index of consumer prices and the price level index.

The purpose of this paper is to present the price convergence in Romania measured on the base of HICP and the price level estimated in the PEC framework.

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Keywords: price convergence, inflation, price index, purchasing power parities, price level

1. Introduction

The Governance System of the European Union was set up in order to allow the pursuing of the major economic policy goals as stipulated in the Treaty of Maastricht, which aims for a non-inflationist sustainable economic growth, for a high level of employment, also for a proper functioning of the Economic and Monetary Union (EMU). The system is based on the „four freedoms" regarding the circulation of goods, services, capital and workforce within the European Union and it relies on two main pillars – The Lisbon Strategy and EMU.
Considering the socialist legacy of many of the new states` economies, Romania included, the Council of Europe regards the convergence of their economic systems to those of other state members and a sustainable reducing of the life standards gaps as being preliminary conditions for a smooth integration into the single EU market. Thus, from an economic point of view, the EU admission has meant:

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- a fully functional, open market economy, able to cope with free competition;
- adopting the economic legislation included in the acquis communautaire, especially the Single Market norms;
- an engagement for a future adoption of Euro as a currency.

At the same time, the Copenhagen political criteria urge the candidate countries to ensure the stability of the institutions which guarantee democracy, the rule of law, the human rights and the protection of minorities.
The creation of both the Economic and Monetary Union and of the single common market have meant two very important steps in getting a more and more compact Union. The first step regarding EMU lead to the adoption of a single currency and to the elimination of the exchange rates fluctuations, while the second one lead to the elimination of physical, administrative and technical barriers in order to achieve a sustainable economic growth and a stimulation of competition.
These two aims are frequently monitored, among the indicators measuring their fulfilment being those concerning prices: The harmonised index of consumer prices and the price level index.

2. Technical considerations

2.1. The harmonised index of consumer prices

Within the European and especially in the Euro zone, inflation is measured by using the „Harmonised index of consumer prices", known by the HICP acronym. The „harmonised" term refers to the fact that all countries in the European Union follow the same methodology for the computation of this index. This ensures the fact that the data from different EU countries are comparable.
In most EU countries, the national index of consumer prices (IPC) continues to exist simultaneously, in most cases the differences between HICP and national IPC tending not to be very large.
How is HICP computed?

- Price collection: In Romania, 90,000 million prices are collected monthly from about 7,700 outlets in 68 survey centres across the 42 county capitals..
- Aggregation of goods and services: In order to compute HICP, besides the collected prices, we need to set up a weighting system and to choose an aggregation formula. The weighting system is designed based on the expenditures of population households estimated by the National Accounts and on the data from the household budgets survey. Considering practical restrictions and the need of quick data availability, the accepted formula for the HICP computation is the chain Laspeyres-type, which implies the annual updating the weighting system. This principle was needed just as in order to keep the index relevance and to reflect with accuracy the changes in the consumption patterns which may appear from one year to another. An important aspect is that referring to the classification of products into product groups. In this regard, for the construction of HICP the COICOP classification was chosen.

2.2. Purchasing power parity

The purchasing power parity at European level is the result of the European Comparison Programme (ECP) launched in 1979 as part of the International Comparison Program. The ICP is a statistics international initiative having as purpose the collection of comparative prices and the estimation of a conventional currency to be used instead of the exchange rates existing on the market for converting the national currencies, thus allowing the comparison in real terms of the economies and of the inhabitants` well-being.
How are PPPs computed?
Eurostat calculates the Purchasing Power Parities (PPPs) annually, for all the 28 Member States. In order to calculate the PPPs, each country participating in the ECP has to provide (i) a set of national annual average prices and (ii) GDP calculated by the expenditure approach which identifies the components of final demand: consumption, gross capital formation and net exports.
The purchasing power parities are calculated both at product level and at product groups level and for every

level of aggregation up to GDP product. The calculation is done in three stages. First stage is at product level, where relative prices for individual products and goods are calculated; the second stage is at product goods level, where simple arithmetic average of relative prices is calculated to obtain the un-weighted group parities; the third stage is carried out at every aggregation level of the GDP expenditure components, where PPP`s for the groups of products are weighted by the product group expenditure and weighted PPPs for a given aggregation level are obtained. The method used by Eurostat for the aggregation of parities is known by the name of Elteto, Kovacs and Szulc method (EKS). This method has the advantage of reflecting more accurately the differences between two countries and it also minimizes the Gerschenkron effect.

3. Analysis of price convergence in Romania

3.1. The differences in the structure of consumption expenditures versus the Euro area.

In the chart below is shown the structure of consumption expenditure of households for the year 2013 in Romania compared to the estimated average for the Euro area, on various aggregation levels used by NIS Romania (COICOP classification – CP01:CP12) for the effective calculation of HICP and by ECB (grouping by goods and services) for their own analyzes. The differences between the expenditure weights in the two countries reflect both the different consumption patterns and the different relative prices levels.

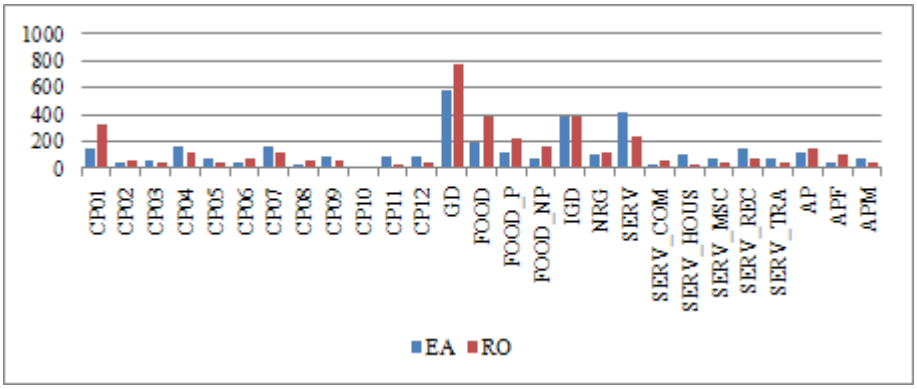

Fig. 1.

The expenditure for purchase of goods in Romania represents 74.4% out of the total consumer spending, while at Euro area level the average expenditure for purchase of goods is around 58.4%.It can be noticed that in Romania about a third of the total expenditure is made for the purchase of food goods (CP01), twice as much compared with the average one in the Euro area. Another component showing the differences in the living standards is the weight of healthcare (CP06) from where it can be noticed that in Romania the expenditures are higher than in the Euro area. This difference is primarily due to the purchase of medicines. As for services, the biggest difference is registered in the case of services for housing (SERV_HOUS) where the impact of rents is higher in the Euro area. It is known the fact that owner-occupied housing has a higher weight compared to the one in EU and Euro area.

Another common component in the analyses on inflation are the products whose prices are administrated (AP). In 2013, the AP share is 14.98% out of the total consumption expenditure, 2.5 percentage points higher the average level of Euro area. A further analysis of this component shows that in Romania the AP share is higher (72% out of total AP share) for the products having fully administrated prices (APF), while in the Euro area the share of the products having mainly administrated prices (APM) is the most important (62,5% out of total AP share).

3.2. The evolution of consumer prices in Romania

Romania still faces an annual increase of consumer prices which is higher than the one registered in the Euro

area However, ever since Romania officially started the EU accession negotiations, inflation has had a visibly decreasing trend. Still, the diminishing of the inflationary gap between Romania and the Euro area has been more important since January 2007, the actual EU accession date. The integration of the Romanian market into the single European market by the implementation of the "four freedoms" mentioned in the beginning of this paper, together with other changes in the national policies, e.g. the changes in the monetary policy, have led to this decreasing trend.

Between 2007-2013, the average annual inflation (CP00) was 5.3%, lower by 14.9 percentage points (pp) than the average calculated for 2000-2006. The chart below shows that the trend was a decreasing one for both goods and services. The drop of prices for processed and unprocessed food goods had an important influence (FOOD_P and FOOD_NP), also the reducing of the average price increase rate for energy goods (NRG) and consequently for the products having administrated prices (PA).

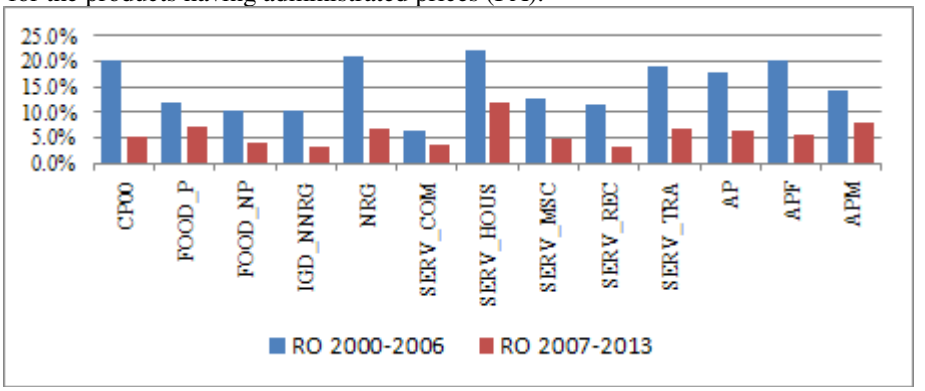

Fig. 2

In 2007-2013, the share of products experiencing annual average price changes higher than 5,0% was 50%, except the year 2008, when the harmonized annual average inflation level in Romania was 7,9%. Starting with 2011, when the basic effect of the VAT increase dissipated, the share of the products with average annual price changes higher than 5% was considerably lower, reaching 16.97% in 2013. Besides, in 2013, more than 60% of the HICP products (COICOP 4 digits) registered annual average increases of less than 2.5%.

Fig. 3.

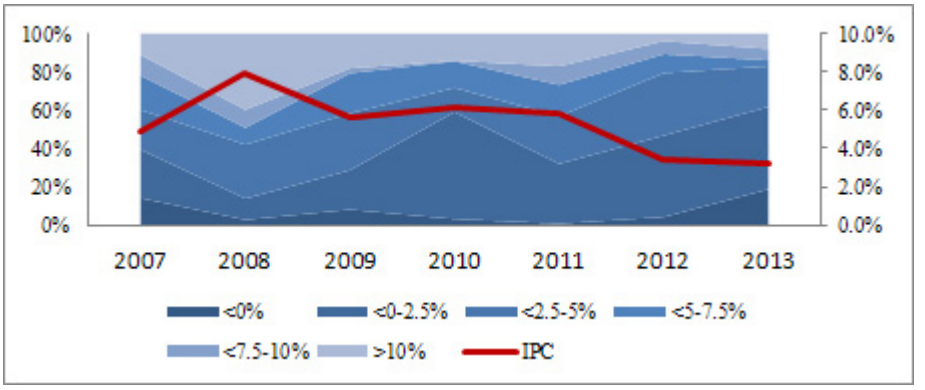

Fig. 3.

Still, the process of catching up with the inflation levels registered in the Euro area is far from being over. During 2007-2013, the average annual all-items inflation level registered in Romania was higher by 3 percentage points than the one in the Euro area. The Balassa Samuelson effect has made the tariffs of services,

also consolidated by the rising prices of public utilities and by the development of communication industries, to increase in Romania faster than in the Euro area. The need to develop energy, communication and transport networks able to satisfy the demands of sustainable development and of the single market, also the rapid growth of information technologies requested costly investment with an impact on the price dynamics in Romania. It has to be mentioned as well the impact of the prices of goods prevailing in the expenditure structure, namely the food goods. The processed food goods in Romania registered a 3.5 pp raise compared to the Euro area level in the same period.

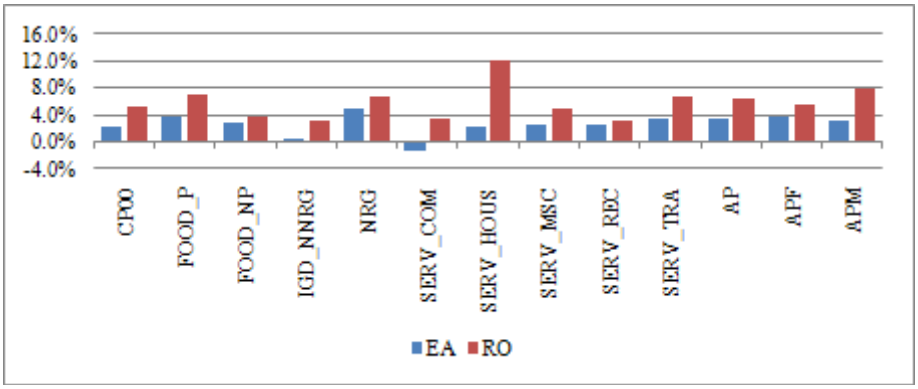

Fig. 4.

During the entire 2007-2013 period, the average annual inflation rate shows a higher dispersion than the one in the Euro area; this could explain the uncertainties and difficulties in anticipating the evolution of prices during this period. The table below shows the average annual rates and the standard deviation registered in both Romania and Euro area, in 2007-2013, also in year 2013. It can be observed that, during the entire 2007-2013 period, the price dispersion is greater in Romania as compared to the one in the Euro area for all the groups of goods and services presented, except energy goods. In 2013, despite the reduction in price dispersion differences on product groups, at the aggregate level (total HICP) the gap remains the same. This is largely due to food and energy goods.

Tabel 1.

	Romania				Euro area			
	2007-2013		2013		2007-2013		2013	
	average	stdev	average	stdev	average	stdev	average	stdev
TOTAL HICP	5,3	2,1	3,2	1,6	2,0	1,0	1,3	0,4
Processed food goods	7,1	3,4	2,3	2,2	2,8	1,8	2,2	0,2
Unprocessed food goods	4,0	5,9	6,6	5,3	2,3	1,6	3,5	1,5
Industrial non-energy goods	3,0	0,8	2,0	0,1	0,8	0,4	0,6	0,3
Energy goods	6,8	2,9	4,2	2,2	4,7	7,2	0,7	1,9
Services for housing	3,7	5,7	-0,7	1,3	-2,1	1,2	-4,2	0,6
Transport services	12,3	8,4	6,7	0,9	2,0	0,3	1,7	0,1
Communication services	4,8	1,6	3,8	0,5	2,0	0,8	0,7	0,2
Personal and leisure services	3,1	1,3	2,4	0,3	2,2	0,8	2,2	0,5
Other services	6,8	2,8	5,3	1,0	2,9	0,7	2,4	0,5

Another factor which explains the price convergence gap between Romania and Euro area is represented by the tax system differences. Between the January 2007 and July 2011, the changes of taxes on products in Romania played an important role in the evolution of inflation. This can be noticed in the trend of the annual inflation

(RO and EA) and of the annual inflation at constant taxes (RO-CT and EA-CT). During 2007-2013 in Romania, the annual inflation rate was higher than the annual inflation rate at constant taxes in average by 1.4 percentage points. The maximum difference between the two indicators was registered in July 2010, when VAT rate was raised from 19% up to 24%, while the minimum was registered in September 2013, when VAT was lowered for baking products. In the Euro area there was a higher stability of taxes, this is why the difference between the annual inflation rate and the annual inflation rate at constant taxes was marginal.

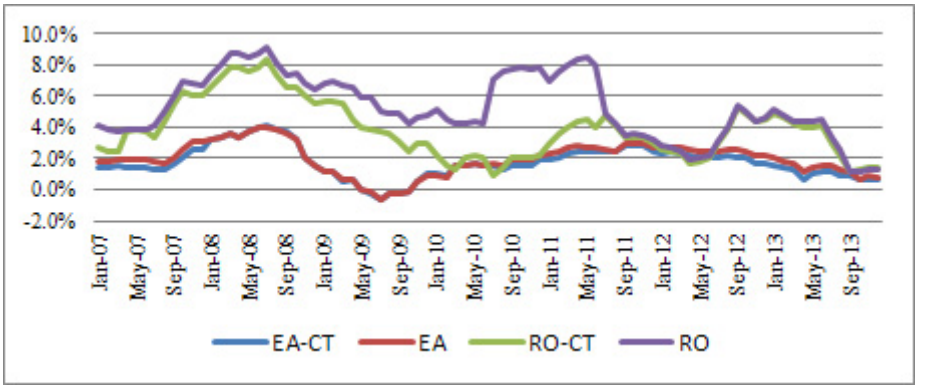

Fig. 5.

3.3. Nominal convergence

The chart below shows the difference between the reference value for the evaluation of the nominal convergence criteria and the annual inflation rate registered in Romania. During 2007-2013, the average annual inflation rate in Romania was higher than the reference value. The average gap for this period was 2,8 percentage points, the maximum being 5.0 percentage points in October 2009 and June 2011. The only months when the average annual inflation rate in Romania was marginally below the reference value were July 2014 and August 2014. Besides, the smallest gap was registered between May 2012 and December 2012.

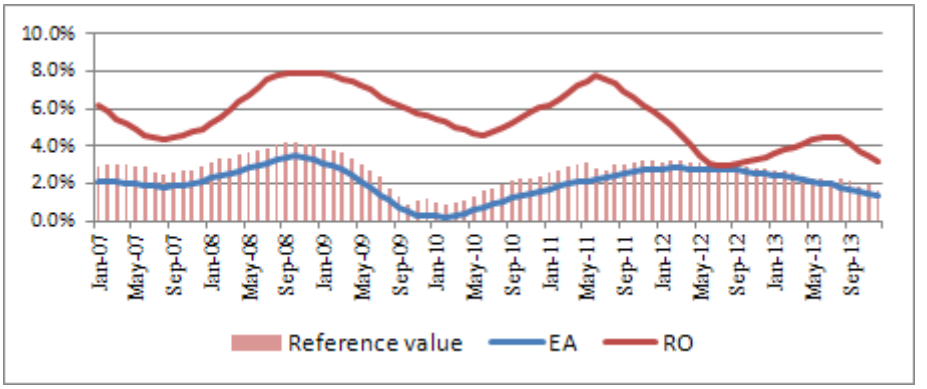

Fig 6.

4. The comparative price level in Romania

The comparative price level of Gross Domestic Product (GDP) in Romania dropped by 4.9 pp in 2013, as compared to 2007, the EU admission year. In 2013, out of all EU Member States, 11 of them registered decreases of the GDP price level as compared to 2007, while 3 of them (United Kingdom, Ireland and Hungary) registered larger price level decreases than the ones in Romania.

Romania has a level of per capita income and productivity much lower than the one of UE 15. According to the

Balassa Samuelson effect, this implies a lower aggregate price level due to lower costs for non-tradable goods and services. The chart below confirms the strong link between the levels of per capita income (measured by the volume indices of GDP expressed in purchasing parity standard) and price levels, the correlation coefficient being 87.3%. Despite this strong link, in some of the Member States there are significant differences between the comparative price levels and the GDP per capita levels. For example, in Germany, the price level is 98.1% as compared to the average EU 15, while the GDP level per capita is 114%. The same thing is happening especially in the cases of Member States whose GDP per capita is higher than the average EU 15. We can say the level of income isn`t the only reason for the differences in the price levels across countries, and that is why other factors have also to be analysed in order to explain these gaps which exist between the EU Member States.

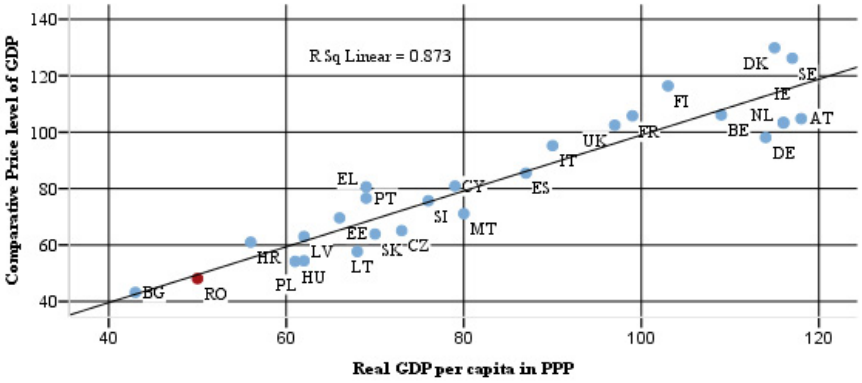

Fig. 7.

Theory shows that, in the case of the law of one price, the prices of goods are set on the international market, while for services – deemed non-tradable – the tariffs are determined by local conditions. This evident fact can be noticed (see the chart below) in the case of Romania too, where the price level for goods reached in 2013 at 62% as compared to the EU 15 average, while services reached a level of 35%.

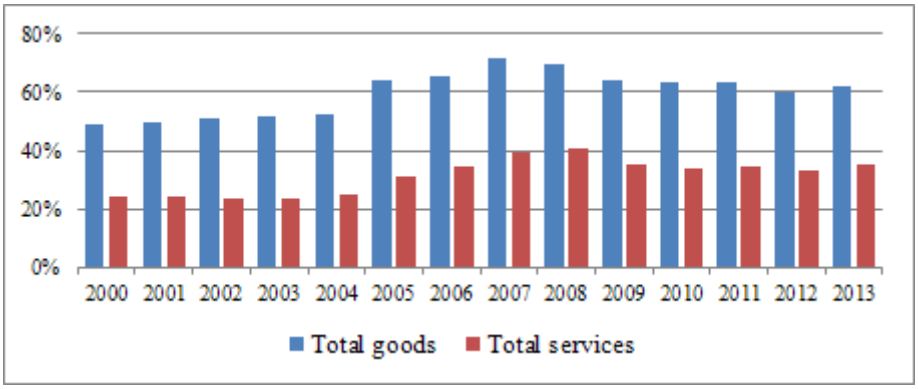

Fig. 8.

The source of divergences in the case the price level for goods can be analysed by taking into consideration a classification of goods by durability. In the chart below it can be noticed a better convergence of the price levels of goods in 2013 in the case of semi-durable and durable goods (80% of the average EU 15 level). The reason for the durable goods not reaching a full level of convergence as well can be attributed to the existence of some significant non-tradable components in the prices of all goods, such as wages, rents and transport, but

another possible explanation could be the problem of the endogen products` reputation.

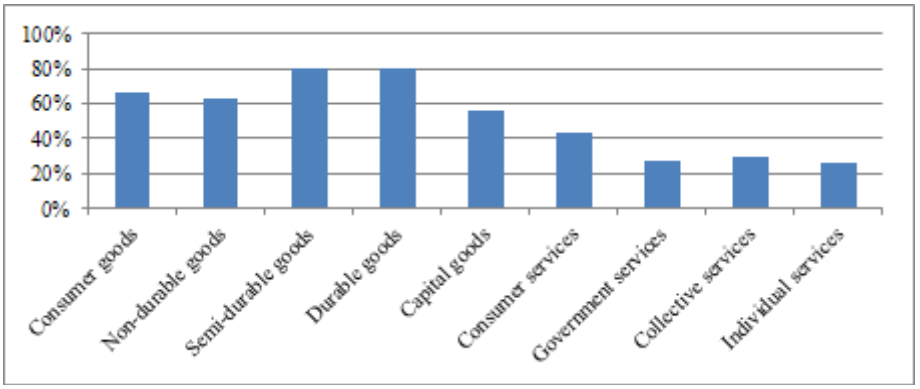

Fig. 9.

In 2013, in Romania, the products deemed tradable either comprises a high level of transacted goods, e.g. clothing and footwear (CP02 in the chart below) or the equipment for personal transport and communications (included in CP07 and CP08) have a high level of convergence. An improvement of the price convergence was also registered in the case of alcoholic beverages and tobacco, where the EU directives have imposed minimal harmonised rates. The lack of complete convergence for these goods is explained by the fact that, in Romania, as opposed to the Member States having the highest per capita income level, has negotiated an extension of the adjustment period, and that is why it still charges rates lower than the standard minimal level set by EU directives. On the other hand, in the case of services for housing (CP04), where rents and public utilities are included, also in the case of restaurants and hotels (CP11) and financial services there is a price level relatively low as compared to the average EU 15. In the case of services for housing, the price convergence is influenced by tariffs regulation decisions at national and local level for water, electric energy and natural gas. The lowest price convergence levels can be observed in the case of goods and services for health (CP06) and education (CP10). We can talk here about the low degree of development of private services, consequently the cost of healthcare services in Romania are significantly subsidized in the public sector.

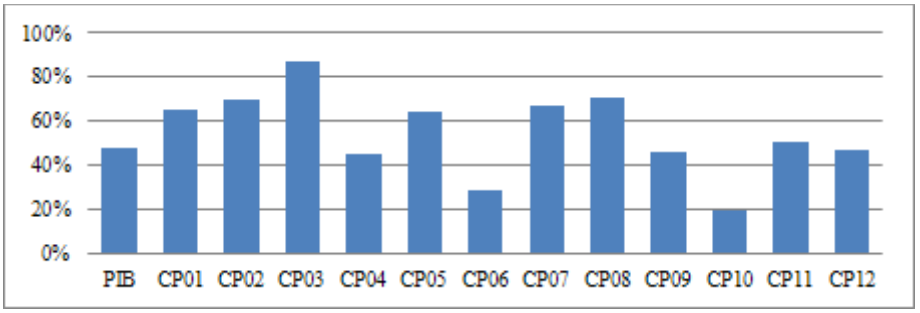

Fig.10.

5. Conclusions

The purpose of this paper is to present a statistical evaluation of the price convergence in Romania measured on the base of HICP and the price level estimated in the ECP. Along with admission of Romania in the EU, a speed-up of the market integration was expected, also an increase in efficiency and economic welfare by the price convergence. Although the degree of market integration is relatively high, the price dispersion in Romania as compared with the Euro area has stayed significant.

A retrospective analysis since the EU admission show that in Romania, the inflation measured by the

harmonized index of consumer prices has been on a downward trend, but is still relatively high, at an average rate of 3,2% in 2013. The level is higher by 1.6 percentage points than the reference value measured according to the criteria regarding the price stability in the EU. Also, the price dispersion as measured by the standard deviation is still above the average level registered in EU for all groups of goods and services. Another factor having a significant influence over price stability has been the fiscal policy of amending the taxes on product as a result of the program for the harmonization of excise duties or the need of increase of the budget revenues and implicitly implicit the fulfilment of the criteria for financial stability.

In Romania the price level is significantly lower as compared to the EU 15 average, most probably this is due to the low per capita income level. In addition, the poor marketing and the low reputation of the domestic goods and services can also be regarded as factors reducing the convergence of prices in Romania and the EU.

There are also other two factors, deemed as essential for explaining the price convergence process in the Romanian market. On the one hand, the process of recovering the per capita income leads to an increase of the price level and of the inflation level during transition. The price level increase influences the consumer behaviour and the production pattern. On the other hand, the increased competition puts a pressure to reduce prices. In order to carry out an analysis of these two factors, a factorial analysis is needed - which can be done by taking into consideration the real GDP, the real labour productivity and the payment of the employees in order to find the impact of the recovery process, also the opening to the foreign trade or the penetration level of imports in order to determine the impact of competition on price convergence.

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References

European Economy (2001), 'Price levels and price dispersion in the EU', Supplement A, No7 July

Gheorghe, M. (2011) – "Evoluţia inflaţiei măsurată pe baza standardelor europene şi diferenţa faţă de valoarea de referinţă a stabilitaţii preţurilor", pp. 152-157, Revista Română de Statistică Trim II/2011- Supliment

Gheorghe, M. (2012) – "Selectarea modului de măsurare a evoluţiei preţurilor folosind metoda indicilor", pp. 29-38, Revista Română de Statistică 8/2012.

Banca Centrală Europeană (2010, 2011, 2012, 2013), Raport de convergenţă , Frankfurt am Main

Deep-Burn Project: Annual Report for 2009, Idaho National Laboratory, Sept. 2009.

Eurostat (2001), Handbook on Price and Volume Measures in National Accounts, Luxembourg: European Commission,

EUROSTAT-OECD (2012), Methodological manual on purchasing power parities, Luxembourg: European Commission